Maintenance Role in Supply Chain

What is DoD Maintenance?

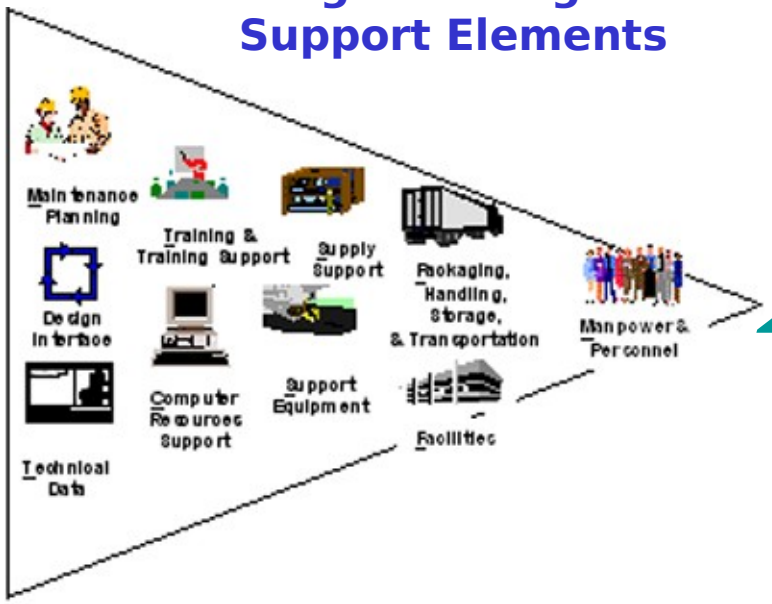
It is DoD policy that:

4.1. Maintenance programs for DoD materiel shall be structured and managed to realize the inherent performance, safety and reliability levels of the materiel. Maintenance tasks restore safety and reliability to their inherent levels when deterioration has occurred. Maintenance programs are structured to meet readiness and sustainability objectives in support of national defense strategic and contingency requirements.

DoD Directive 4151.18, “Maintenance of Military Materiel

Maintenance and PBL

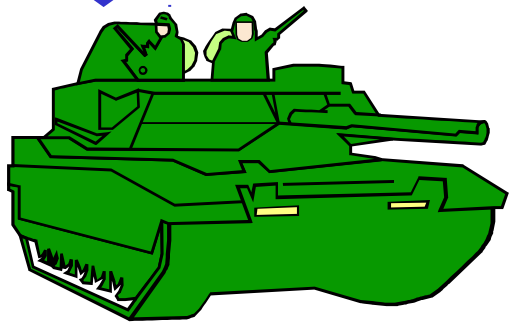
Weapon System Integrated Logistic Support Elements



Σ = **Weapon System Maintenance Capability**

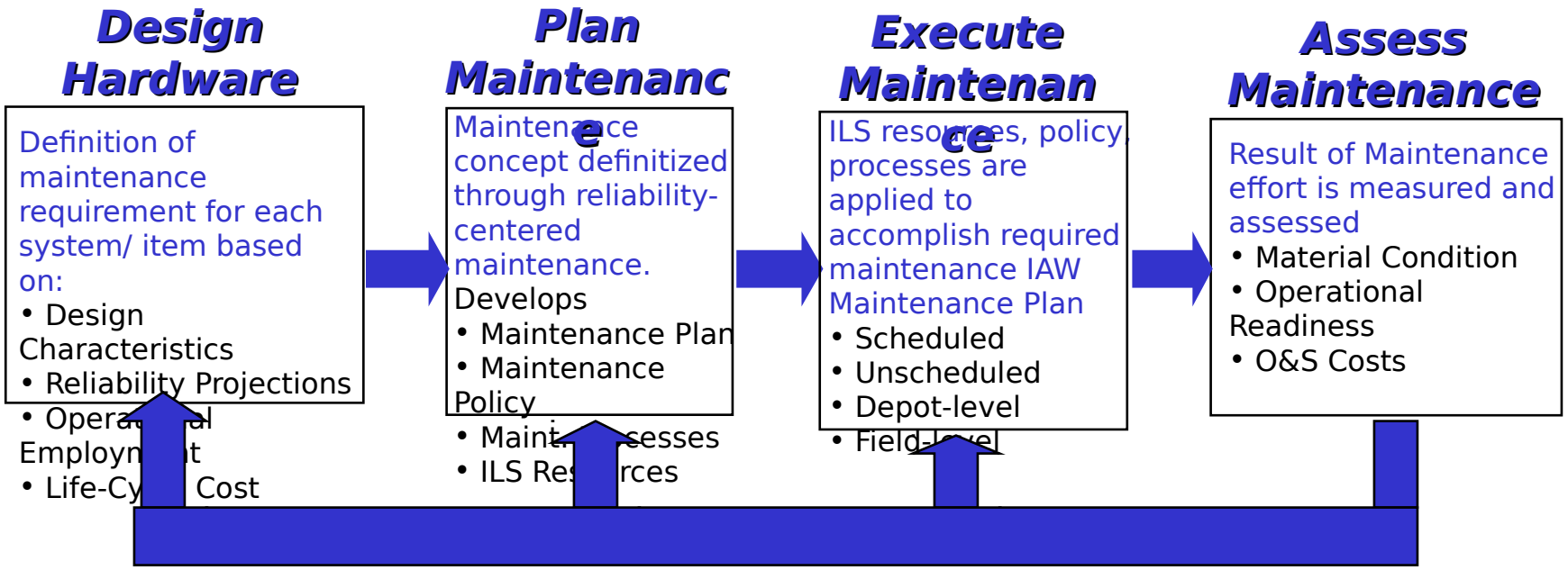
DoD Maintenance is the activity that keeps equipment in good Material Condition - capable of being employed as intended by the Weapon System designer and manufacturer

PRODUCES



PBL and Maintenance are both product-specific

Maintenance is Integral to Life Cycle Management



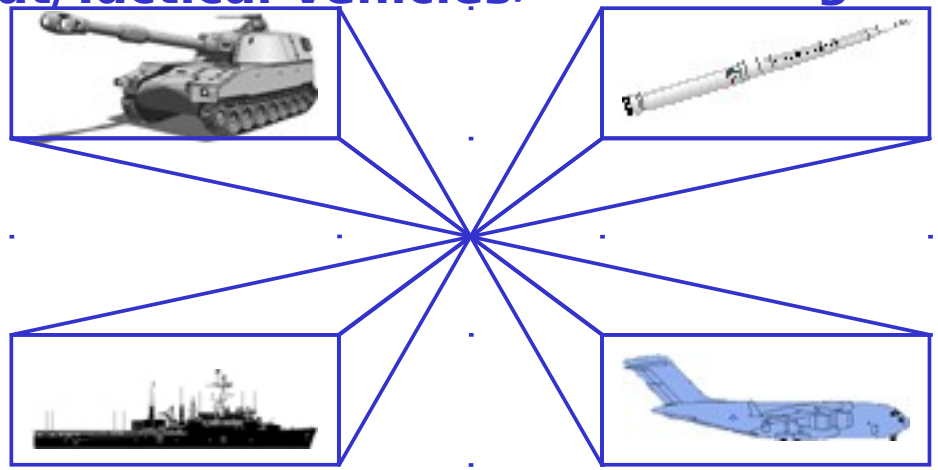
And, Essential to Supply Chain Effectiveness

"Inherent performance, safety and reliability levels" are design characteristics; during the hardware design stage, Maintenance Engineers seek to influence merging designs to eliminate, reduce or simplify the requirement for maintenance. After design freeze, Maintenance Managers evaluate alternative Maintenance Concepts, select the preferred Maintenance Concept, publish a Maintenance Plan which documents how the concept will be implemented and purchase required Integrated Logistic Support resources. Applying the ILS resources provided them, DoD Maintainers use their knowledge, skills and abilities to keep DoD equipment in good material condition or, if damaged or defective, to restore material condition to an acceptable level such that the equipment is capable of being used as intended by its designer and manufacturer.

Maintenance Customers

100,000+ Ground Combat/Tactical Vehicles

1,000 Strategic Missiles



15,000 Aircraft/Helicopters

300+ Ships

+ 250K+ Wheeled Vehicles
+ Comm/Electronics Equipment
+ Support Equipment
+ …

Maintained by:
• 681,000+ DoD personnel
• Private sector companies

Maintenance cost:
~$55B per year

National Defense Weapons and Equipment valued at over $585 Billion

DoD Maintenance – Organizational Levels

Operation

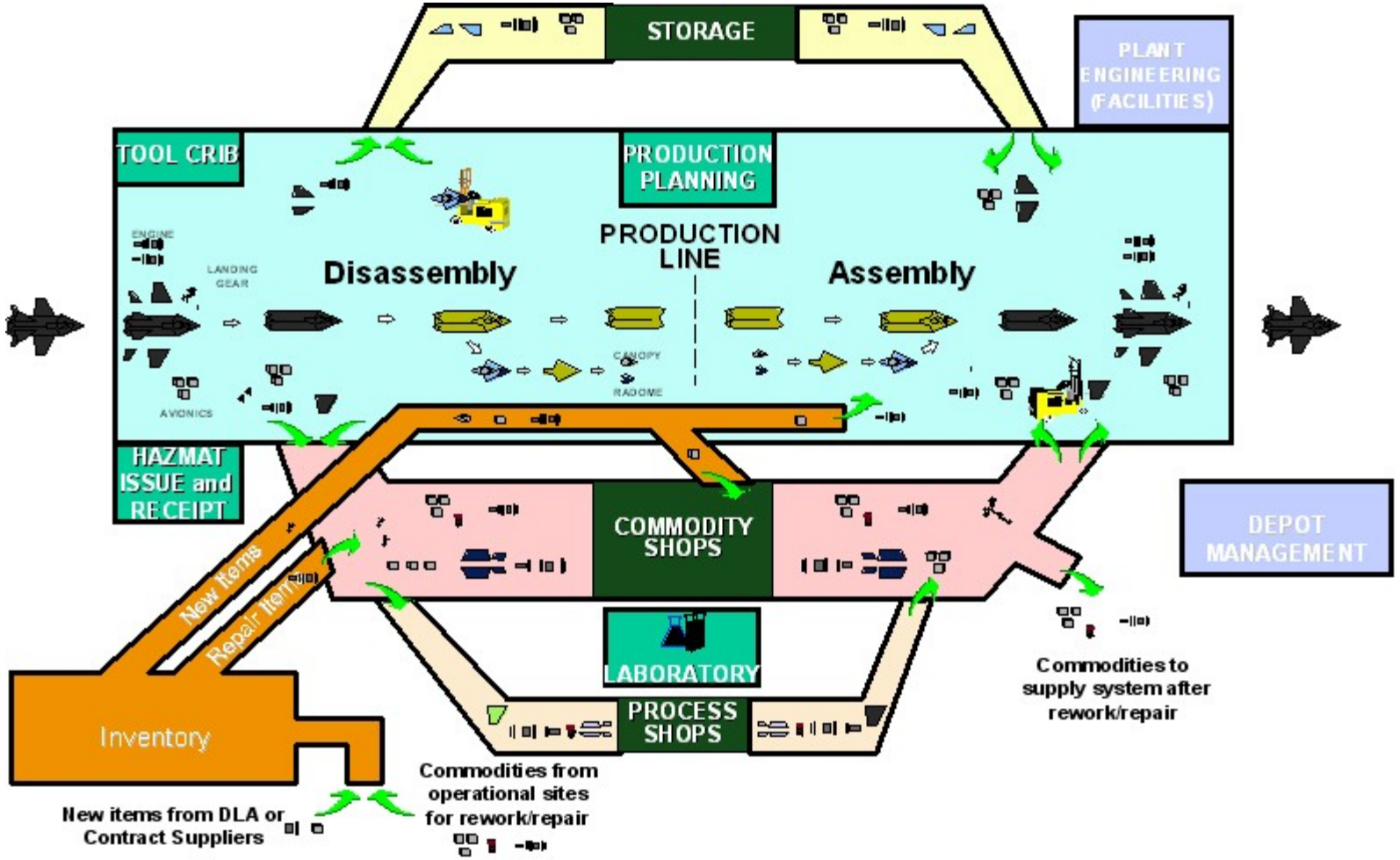
- Compliance-based
- Influenced by:
  - Inspections
  - Unscheduled maintenance
  - Life-limited items
  - OP TEMPO

Intermedi ate

- Estimate-based
- Influenced by:
  - Timing factors
  - Engineered requirements
    - OPTEMPO
    - Modeling

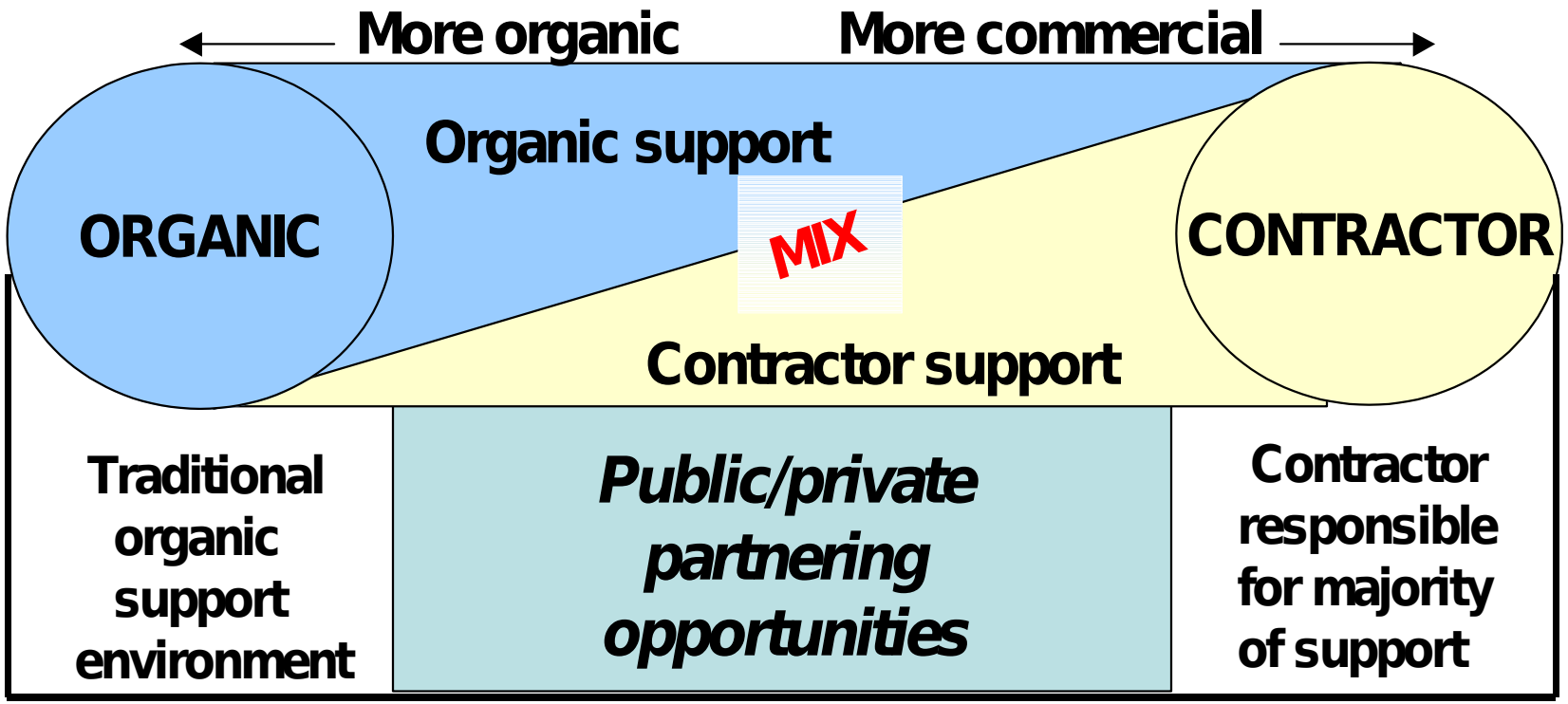
Depo

What is Depot Maintenance?



Complex processes increase demand for integration

Depot Maintenance Partnering



Also Applicable to:

- Distribution Depots
- Transportation Hubs
- Base Support Facilities

Depot Maintenance Partnerships

Desired End-State:

Dramatic increase in depot maintenance public-private partnerships, resulting in:

- **Greater private sector investment in facilities and equipment**
- **Increased facility utilization**
- **Reduced cost of ownership**
- **Workforce integration**
- **Improved business processes**
- **Improved customer support**

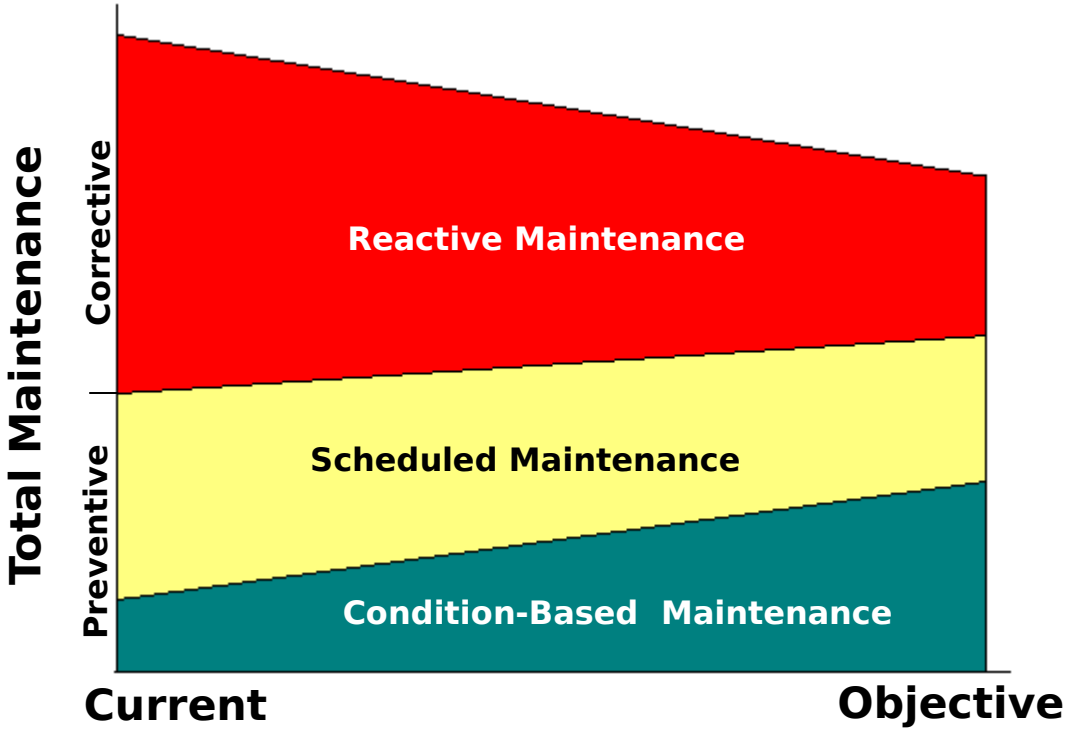
When is Maintenance Accomplished?

	PREVENTIVE	CORRECTIVE
SCHEDULED		
UNSCHEDULED		

When is DoD's Maintenance Accomplished?

Two Categories of Maintenance

Corrective- Preventive



Condition Based Maintenance Plus (CBM+)

- **Definition**

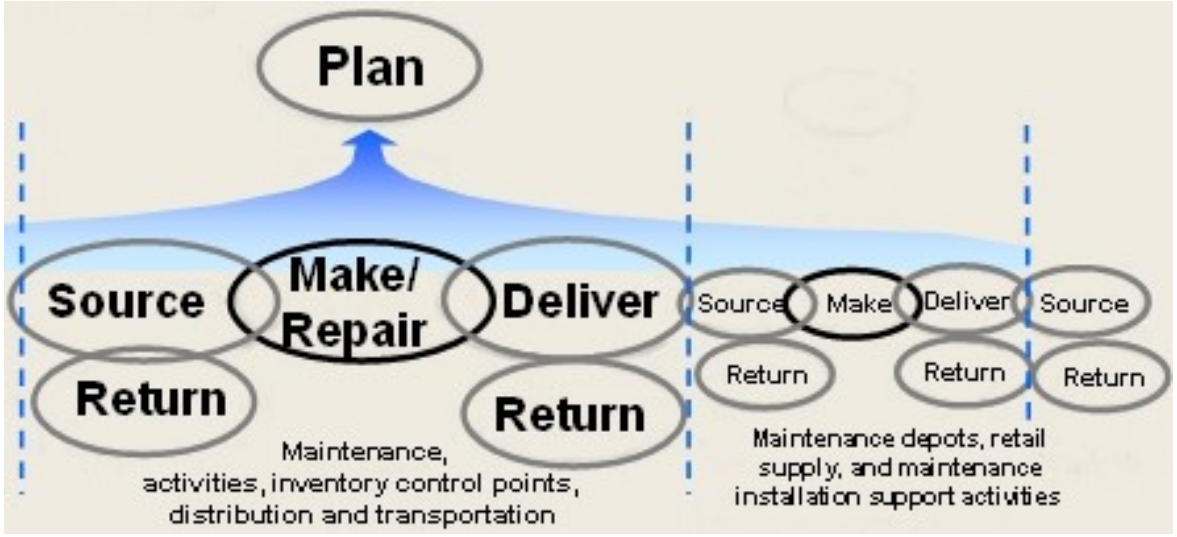
  Improve maintenance practices, reduce cost and footprint based on the application and analysis of real-time assessment of equipment condition which is obtained from embedded sensors and/or external tests & measurements taken by portable equipment.

- **Goal**

  Improve maintenance agility and responsiveness, increase operational availability and readiness, and reduce life cycle total ownership costs
  - **Encourage Services to employ health monitoring technology (prognostics, diagnostics) to maximize supportability and readiness of major systems**

- **CBM+ includes:**
  - **Enhanced prognostic and diagnostic techniques**
  - **Failure trend analysis**
  - **Electronic portable or point-of-maintenance aids**
  - **Serial item management**
  - **Automatic identification technology**
  - **Data-driven interactive maintenance training**

Maintenance Roles in Supply Chain



Maintenance and repair activities play two major roles in the DoD supply chain:

- **They are the major customers of supply chain inventory.**

- **They are the major source for replenishing the reparable item inventory.**

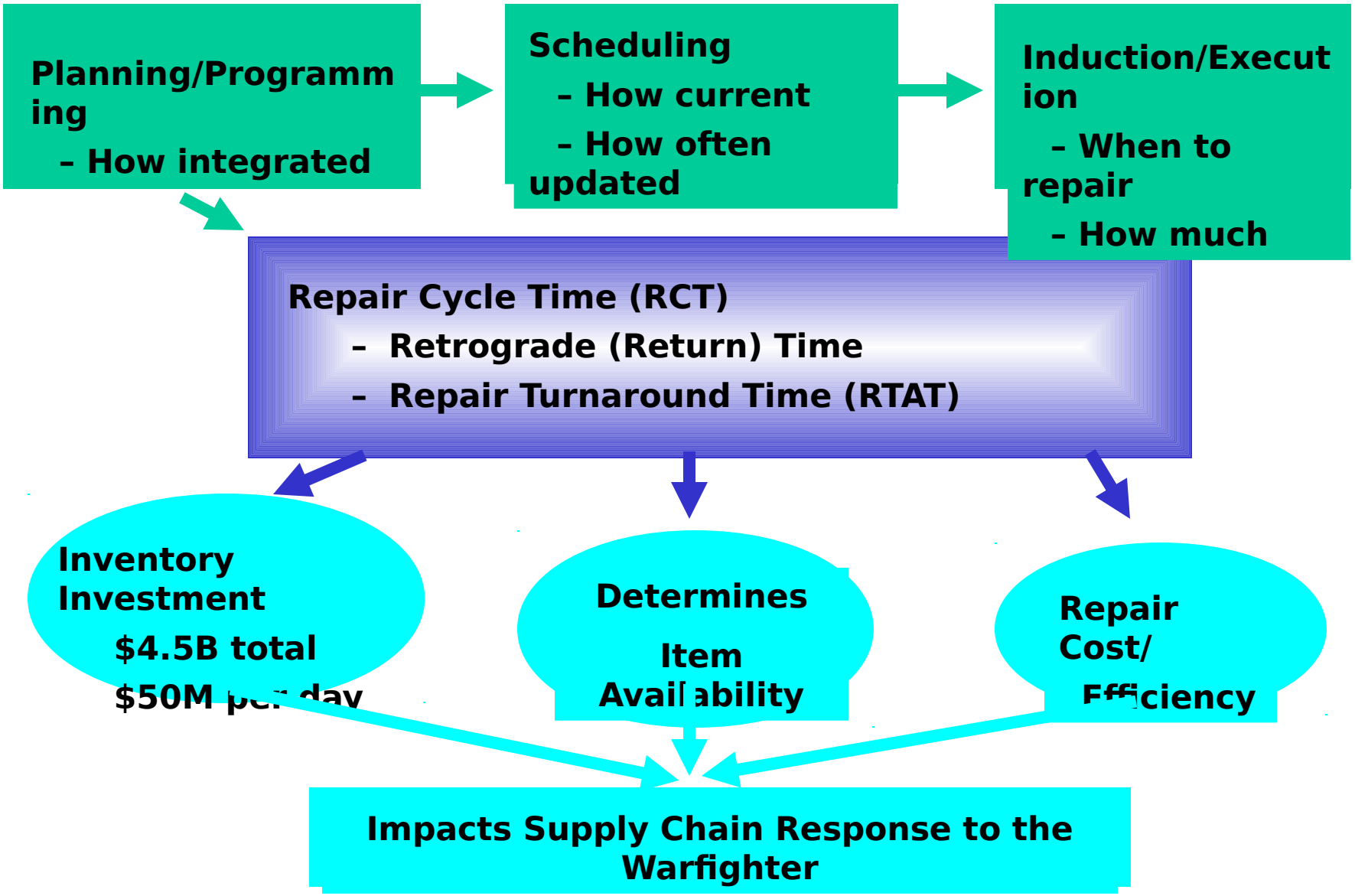
Forecasting Maintenance Inventory Requirements

Engineering estimates of failure for newer items that have not been in the system long enough to experience reliable demand

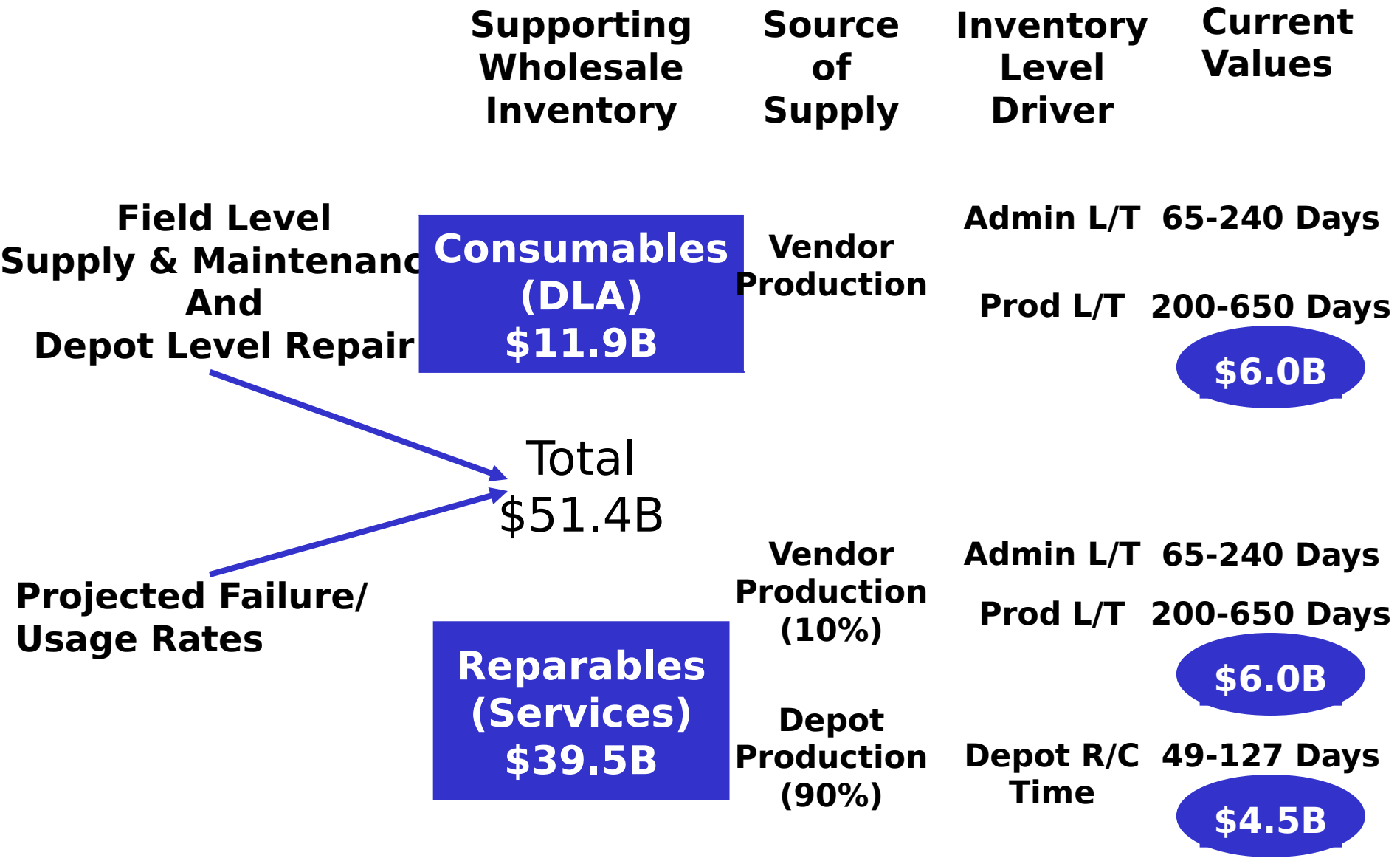
Historical failure data collected from maintenance replacement data or supply requisition data: this historical data can be modified by the use of past and future program data (e.g., flying hours) and future maintenance programs to generate "parts explosion" data or bill of materiel requirements

Special program data can be furnished by the customer for requirements that are not included in historical demand, and are non-repetitive such as special maintenance programs, exercises, or other programs.

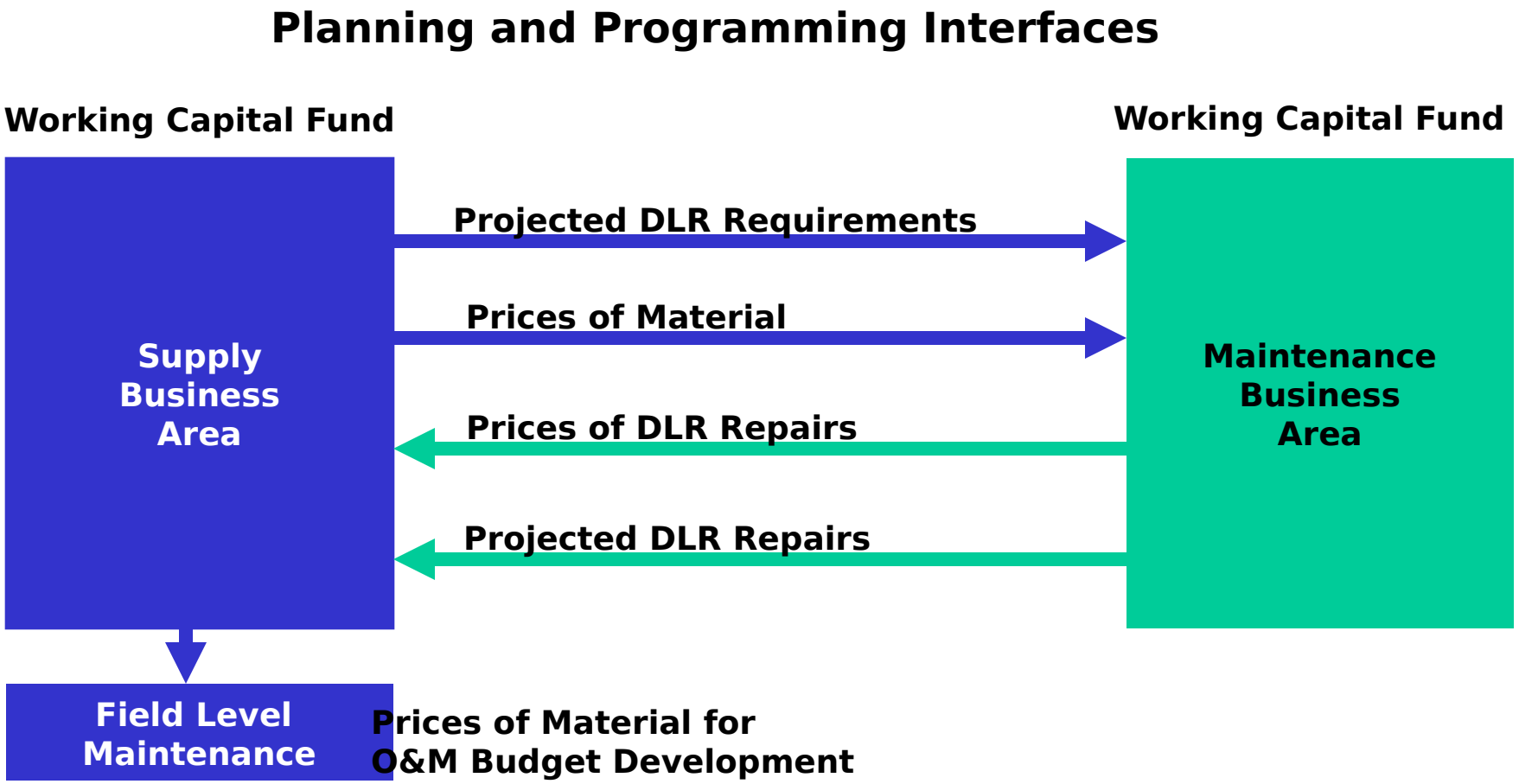
Repair of Depot Reparable Items



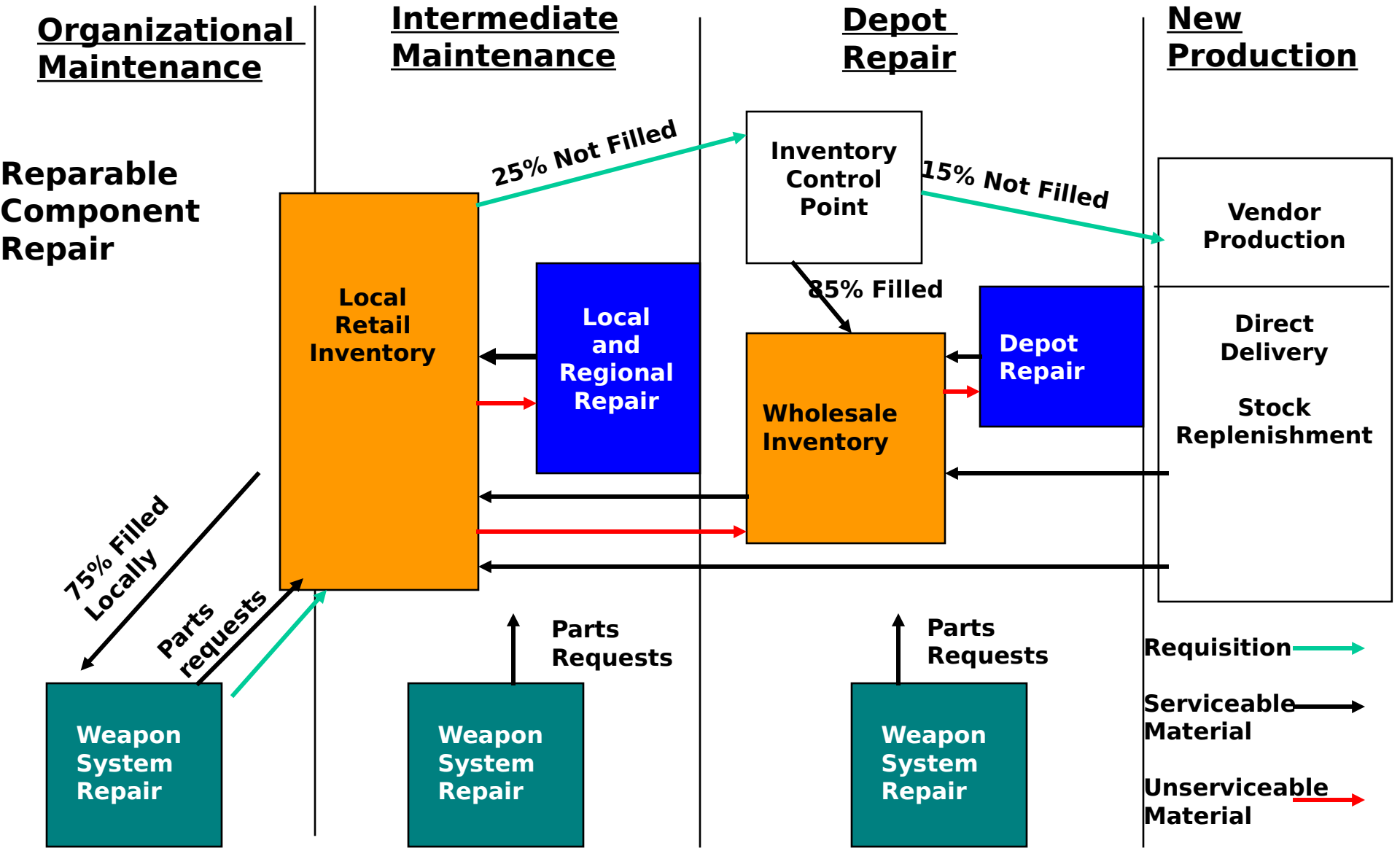
Supply- Maintenance Interface – Inventory Investment



Supply- Maintenance Interface - Financial



Role of Maintenance in the DoD Supply Chain



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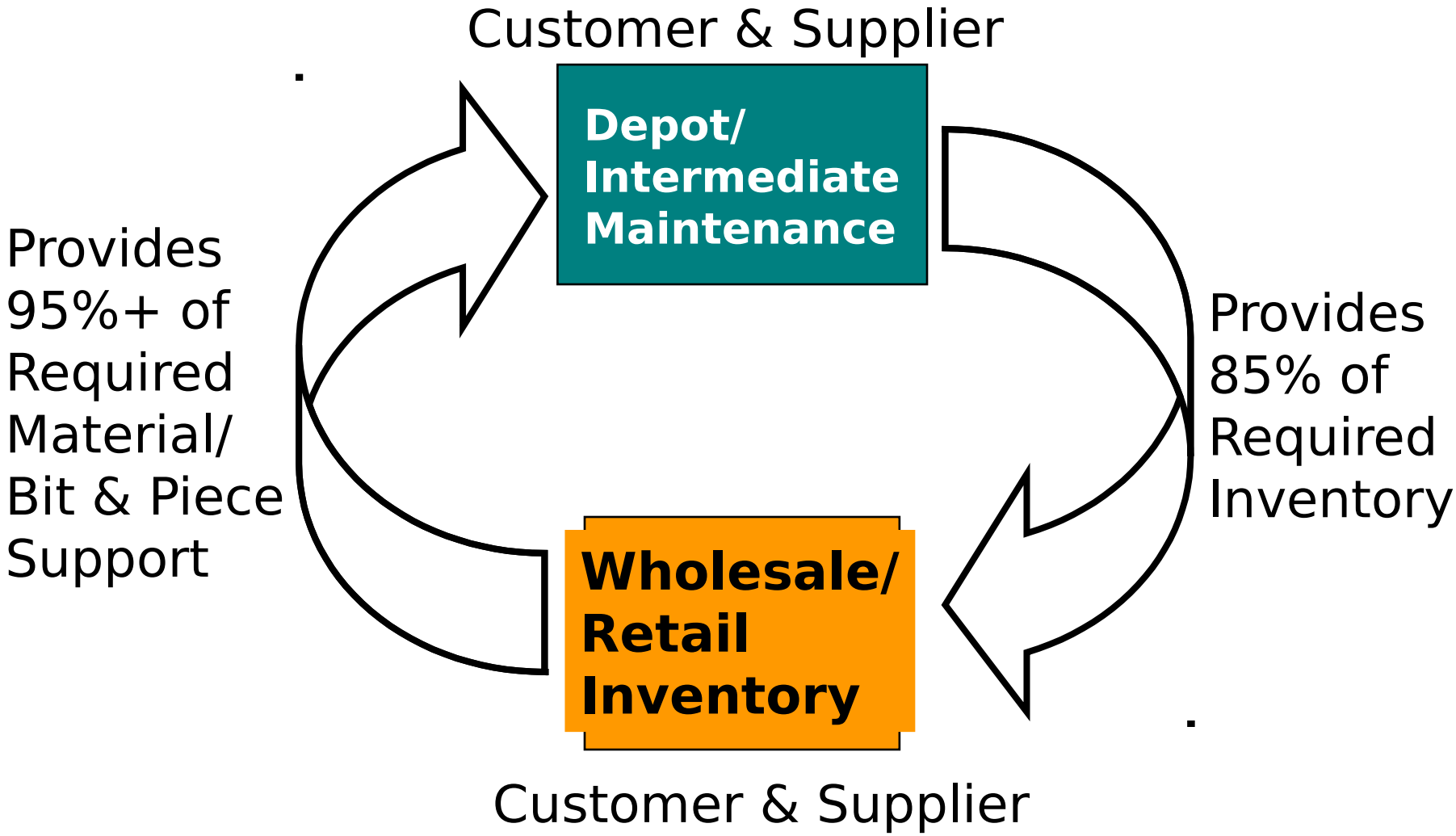
Customer & Supplier
Depot/ Intermediate Maintenance
Provides 95%+ of Required Material/ Bit & Piece Support
Provides 85% of Required Inventory
Wholesale/ Retail Inventory
Customer & Supplier